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OF
OUTSTANDING ENDS

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MARKET SHARES OF OUTSOURCING VENDORS

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I

Introduction

The purpose of this report is to consider the competitive implications within the information services market of a consortium assembled to manage and operate BP's IS infrastructure.

The areas considered for outsourcing consist of:

- Platform operations (data centre management)
- Network management (wide-area networks)
- Desktop services (personal computers and local-area networks)

All of these activities fall within INPUT's definition of systems operations (sometimes referred to as facilities management). INPUT divides the information services market into eight delivery modes:

- Systems operations
- Systems integration
- Professional services
- Network services
- Turnkey systems
- Processing services
- Applications software products
- Systems software products

Detailed explanations of each of these delivery modes are contained in Appendix C.

The objectives of this report are:

- To identify the market shares for each of the proposed consortium members by delivery mode and geographic region
- To compare the 'overall market shares' jointly held by the proposed consortium members with those of the leading vendors in each category

The geographic areas considered in the report are:

- Worldwide
- U.S.
- Europe
- U.K.

The potential consortium members are:

- British Telecom (BT)
- Cable & Wireless
- Computer Sciences Corporation (CSC)
- INET
- SAIC
- Sema Group

II Executive Overview

A Systems Operations

Exhibit II-1 compares the market shares for:

- The leading regional vendors
- The combined consortium
- The leading member of the consortium

The formation of the consortium, even if it were to act as a single company worldwide, would not achieve leadership of the systems operations market in any major regional market.

An important factor in this market is its rapid growth. Both existing companies and new entrants may win large contracts, which will change the competitive profile of the market.

For example, in 1992 Perot Systems won two contracts in Europe, leading to revenues of \$1 billion over ten years. In the U.K., there are known plans to outsource the IS infrastructure of a number of government departments. In particular, it is likely that the Inland Revenue will outsource a contract in the next 12 months worth \$100 million-\$200 million per annum over a period of five years.

Hence in such a rapidly developing market, the leading vendors and their market shares can change rapidly.

EXHIBIT II-1

Systems Operations

Region	Market Share (%)		
	Leading Vendor	Consortium	Leading Consortium Member
U.S.	14	6	5
Europe	9	7	4
U.K.	22	15	10

There is no evidence that any of the proposed consortium members have grown at a rate noticeably exceeding the overall market growth rate in 1992. Hence, their market shares should remain at similar, or lower, levels for 1992.

B**Information Services Market**

Exhibit II-2 compares the overall information services market shares by region for:

- The leading vendor in each region
- The combined consortium
- The leading vendor within the consortium

EXHIBIT II-2

Information Services Market

Region	Market Share (%)		
	Leading Vendor	Consortium	Leading Consortium Member
Worldwide	14.0	2.0	0.8
U.S.	6.0	2.5	1.5
Europe	7.0	1.8	0.9
U.K.	6.0	4.9	2.7

The market share of the consortium is less than that of the market leader in each region.

The same applies to each of the delivery modes with the exception of professional services. Professional services, however, is concerned essentially with the custom development of software, which is outside the scope of the activities proposed for outsourcing by BP.

Also, professional services will typically be handled by separate divisions of the vendors, and so their software development organisations would not be expected to come into direct contact.

For example in the U.K., BT's professional services and systems integration activities are carried out by BT Customer Services while network management outsourcing lies within Syncordia.

Similarly, Sema Group has separate divisions handling platform operations (data centre management) and systems development.

In large development projects, it is common practice for consortia to form for the life of that project. These consortia frequently consist of major "competitors".

For example, a recent project for the DSS combined the skills of:

- BT
- Andersen Consulting
- ACT

Another example is the development of a cross-border administration network for the European Community, which has generated a consortium including:

- Olivetti
- Siemens Nixdorf
- Groupe Bull

Finally the CHOTS project for the Ministry of Defence involves:

- ICL
- Coopers & Lybrand
- Data Logic
- Hewlett-Packard

Such projects frequently involve consortia that, if regarded as a single entity competing in the market, would dominate a number of market sectors or delivery modes.

However, the nature of the market is such that a large number of these consortia, each with differing partnerships, are in operation at any one time.

C

Sema Group and France Télécom

It appears certain that France Télécom is in the process of taking a minority stake in Sema Group.

The official statement from Sema Group is as follows:

‘In a statement to the London Stock Exchange in July we reported that discussions were in progress between Paribas and France Télécom regarding France Télécom taking a minority shareholding in Sema Group, and between France Télécom and Sema Group concerning an industrial partnership. Should the relevant authorities give their approval, an announcement would be made at the appropriate time.’

10th September 1992.

Sema Group's principal shareholders were as follows at 16th March 1992:

	Percent
Compagnie Financière de Paribas and related companies	39.06
CAP Gemini Sogeti SA	28.24
Schneider SA	10.52
CINVEN Limited	6.79
Crédit Agricole and related companies	4.52

It appears probable that in the short term Paribas will sell 19% of Sema Group's ordinary shares to France Telecom.

However, there are also rumours that:

- Paribas would like to dispose of its entire Sema Group shareholding.
- Schneider would like to dispose of its entire Sema Group shareholding.

There may also be a possibility of CAP Gemini Sogeti disposing of its shareholding.

However, it is not clear at present who the potential buyers besides France Télécom are.

It seems probable that France Télécom will restrict itself to a minority shareholding in the Sema Group in the short term. However, this does not preclude the company taking its shareholding to 29% by acquiring:

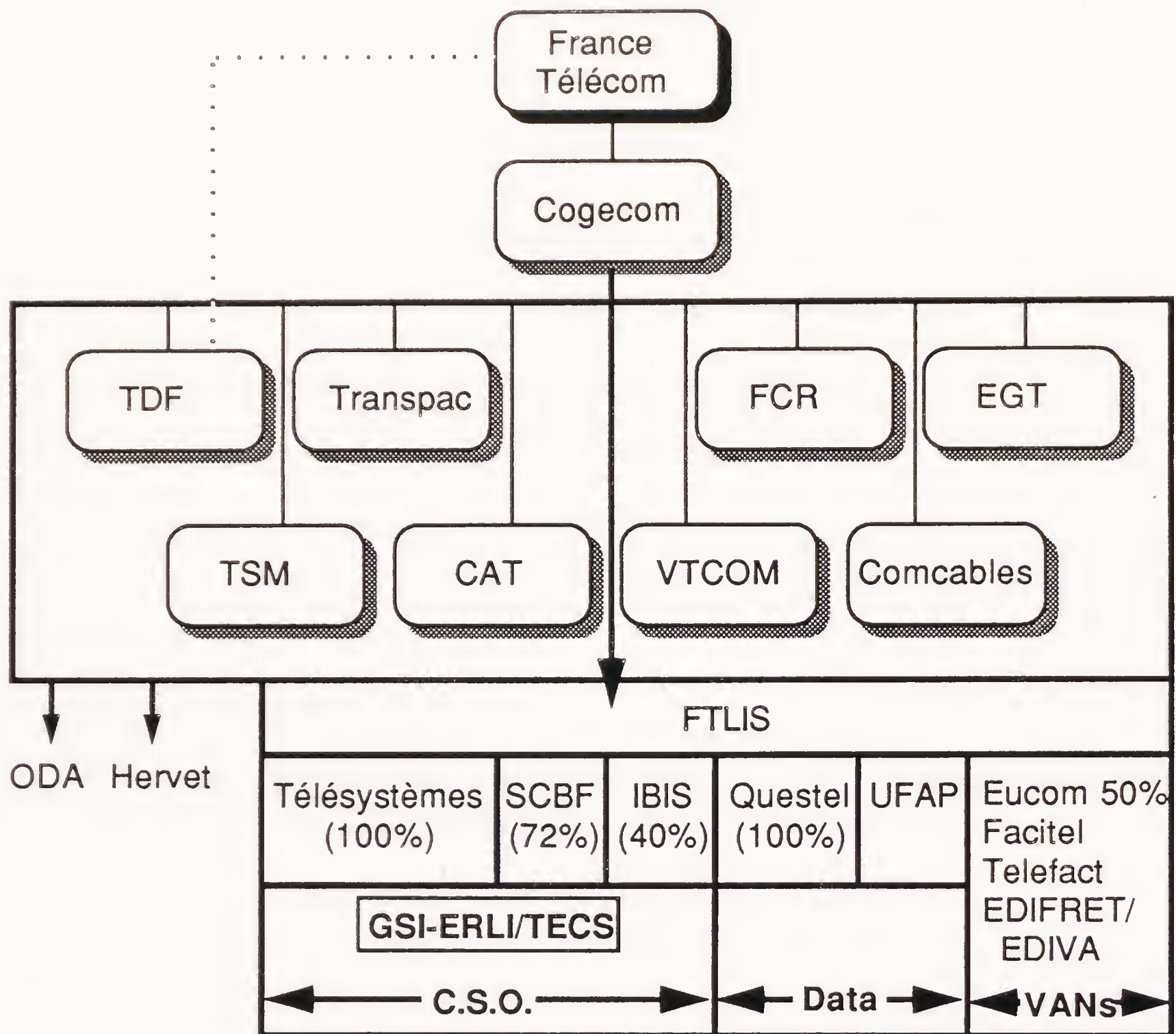
- 19% of the shares from Paribas
- 10% of the shares from Schneider

It seems probable in the light of this shareholding and the talk of "industrial partnership" that France Télécom will nominate an appointee to Sema Group's board of directors.

The shareholding would probably be held by FTLIS see Exhibit II-3.

EXHIBIT II-3

FTLIS Subsidiaries



Télésystèmes is the largest subsidiary within FTLIS and its revenues—all within France—by delivery mode are as follows:

	1991 Revenues (\$M)
Systems operations	87
Professional services	106
Network services	46
Processing services	48
Applications software products	29
Turnkey systems	12
Total	328

However, it is likely in the short term that Télésystèmes and Sema Group would remain as independent companies.

A relationship between a BT subsidiary such as Syncordia and a France Télécom subsidiary, such as Sema Group, is not unthinkable.

It is believed that BT wanted to have both German Bundespost Telekom and Japanese NTT as members of Syncordia. However, in March 1992 Deutsche Bundespost Telekom and France Télécom formed their own joint venture, Eunetcom.

The Swedo-Dutch Unisource NV joint venture between Televerket and Koninklijke PIT Nederland NV has agreed to a network merger with Sprint Corporation so that Unisource can achieve global coverage by 1993.

After starting up in Sweden, Germany, the U.K. and the Netherlands by September, Unisource will add Belgium, France, Norway, Denmark and Finland by the end of the year. Unisource is also negotiating with Kokusai Denshin Denwa Co. of Japan.

To be successful in the network management sector in the long term, vendors will need to offer global coverage, which will lead to a number of joint ventures and partnerships being formed.

III

Vendor Market Shares

A

Overall Information Services Market

Exhibit III-1 shows the market shares within the overall information services market for each of the members of the proposed consortium.

EXHIBIT III-1

Market Shares (%)

Information Services Market, 1990

Company	World-wide	U.S.	Europe	U.K.
British Telecom	0.3	0.2	0.5	2.7
Cable & Wireless	< 0.1	< 0.1	< 0.1	0.1
Computer Sciences Corp.	0.8	1.5	0.3	0.5
INET	< 0.1	< 0.1	-	-
SAIC	0.4	0.7	0.1	0.1
Sema Group	0.3	-	0.9	1.5
TOTAL	1.9	2.5	1.8	4.9

There is no reason to suppose that the members of the consortium would maintain this consortium in the information services market generally. Indeed, it would not generally be possible to do so, outside of the systems

operator sector. Exhibits III-2, III-3, III-4, III-5 show the market shares of the leading information services vendors in each of the following regions:

- Worldwide
- U.S.
- Europe
- U.K.

Worldwide and in the U.S., the combined market shares of the proposed consortium members are significantly less than those of the market leader IBM, and are comparable to those of EDS (excluding the significant captive revenues derived from the company's association with GM worldwide).

The proposed consortium would equal fifth place in Europe and achieve second place in the U.K.

EXHIBIT III-2

Leading Information Services Vendors Worldwide Revenues and Market Shares

Rank	Vendor (Country)	1989 Revenue (\$ Billions)	Market Share (Percent)
1	IBM (U.S.)	13.5	6.4
2	EDS (U.S.)	2.9	1.4
3	DEC (U.S.)	2.8	1.3
4	NTT (Japan)	2.5	1.2
5	Reuters (U.K.)	2.5	1.2
6	Andersen Consulting (U.S.)	2.2	1.0
7	Siemens Nixdorf (Germany)	1.8	0.9
8	CSC (U.S.)	1.7	0.8
8	CAP Gemini Sogeti (France)	1.7	0.8
9	Microsoft (U.S.)	1.4	0.7
10	Computer Associates (U.S.)	1.3	0.6

EXHIBIT III-3

**Selected Leading U.S. Information
Service Vendors, 1990**

Vendor	Revenue (\$ Billions)	Market Share (Percent)
IBM	5.8	6
EDS (excluding GM)	2.4	2
ADP	1.7	2
Computer Sciences	1.5	2
Digital Equipment	1.3	1
SAIC	1.3	1
Andersen Consulting	1.2	1
Unisys	0.9	1
First Financial Mgmt.	0.9	1
Microsoft	0.8	1

EXHIBIT III-4

Leading Vendors in Software and Services Europe, 1990

Vendor	Country of Origin	Est. Sector Revenues (\$ Millions)	Market Share (%)
IBM	U.S.	4,900	7.2
Siemens Nixdorf	Germany	1,690	2.5
CAP Gemini Sogeti	France	1,650	2.4
Reuters	U.K.	1,430	2.1
Digital	U.S.	1,220	1.8
Bull	France	795	1.2
Unisys	U.S.	720	1.1
Andersen Consulting	U.S.	705	1.0
Microsoft	U.S.	655	1.0
Sema Group	France	615	0.9

EXHIBIT III-5

Leading Information Services Vendors United Kingdom, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
IBM	U.S.	785	6.0
ICL (Fujitsu)	U.K. (Japan)	420	3.2
Reuters	U.K.	420	3.2
Hoskyns (CGS)	U.K. (F)	400	3.1
Digital	U.S.	295	2.3
AT&T Istel	U.S.	250	1.9
SD-Scicon	U.K.	220	1.7
McDonnell Douglas	U.S.	210	1.6
Sema Group	France	200	1.5
Andersen Consulting	U.S.	200	1.5

B**Systems Operations**

Exhibit III-6 lists the systems operations market shares of the participants of the proposed consortium.

Exhibits III-7, III-8 and III-9 list the market shares of the leading vendors in each of the major geographic regions: the U.S., Europe and the U.K.

There are no instances in which the combined market shares of the proposed consortium members would lead to market leadership. Indeed, if the revenues of all the consortium members were attributed to the largest consortium member in each region, this would lead to no change in vendor rankings in any geographic area.

EXHIBIT III-6

Market Shares (%)
Systems Operations, 1991

Company	World-wide	U.S.	Europe	U.K.
British Telecom	0.2	< 0.1	0.9	1.7
Cable & Wireless	0.2	0.2	0.4	1.1
Computer Sciences Corp.	3.4	5.0	1.7	1.7
INET	0.1	0.1	-	-
SAIC	0.3	0.4	-	-
Sema Group	0.6	-	4.3	10.2
TOTAL*	4.7	5.7	7.4	14.8

* Totals may not equal due to rounding.

EXHIBIT III-7

Leading Systems Operations Vendors, U.S., 1990

Vendor	Market Share (Percent)
EDS	14
CSC	6
Systematics	3
ACS	3
IBM	2

EXHIBIT III-8

Leading Systems Operations Vendors Europe, 1991

Rank	Vendor	Country Origin	Estimated Sector of Revenues (\$ Millions)	Market Share (Percent)
1	CAP Gemini Sogeti	France	210	9.1
2	EDS	U.S.	205	8.9
3	Sema Group	France	100	4.3
4	GSI	France	90	3.9
5	Data Sciences	U.K.	75	3.3
6	AT&T Istel	U.S.	75	3.3
7	Finsiel	Italy	60	2.6
8	Digital	U.S.	55	2.4
9	Andersen Consulting	U.S.	50	2.2
10	CSC	U.S.	40	1.7

EXHIBIT III-9

Leading Systems Operations Vendors United Kingdom, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (\$ M)
1	CGS/Hoskyns	21.6	190
2	Sema Group	10.2	90
3	AT&T Istel	8.5	75
3=	Data Sciences	8.5	75
5	EDS-Scicon	7.4	65
6=	Andersen Consulting	4.5	40
6=	ICL/CFM	4.5	40
8	Digital	3.4	30
9=	ITnet	2.3	20
9=	P&P	2.3	20

C

Systems Integration

It is normal practice for vendors to form consortia in the systems integration market. However, these consortia are formed on a one-off basis to assemble the set of skills and products required for each individual product. It is common for partners on one project to be competitors on another project, and this practice is widely accepted within the industry. Accordingly, it is not probable that the consortium being formed by BP would work together on a wide range of systems integration projects.

In addition, systems integration is essentially concerned with the delivery of complex systems development projects. There is no systems development component in the functions proposed for outsourcing by BP. Hence, there is no reason to believe that a consortium with an interest in targeting the systems integration market is being created.

Exhibit III-10 lists the systems integration market shares for the proposed consortium members, and Exhibits III-11, III-12 and III-13 list the market shares of the leading systems integration vendors in the U.S., Europe and the U.K.

The combined market share of the proposed consortium would put it in second place in the U.S. and the U.K., and fourth place in Europe.

EXHIBIT III-10

Market Shares (%)
Systems Integration, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	0.2	-	1.1	3.9
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	3.9	6.4	2.5	2.6
INET	< 0.1	0.1	-	-
SAIC	4.6	8.2	0.4	-
Sema Group	0.8	-	3.8	5.2
TOTAL*	9.6	14.7	7.7	11.7

* Totals may not add due to rounding.

EXHIBIT III-11

**U.S. Systems Integration Market
Vendor Market Share, 1990**

Vendor	Revenue (\$ Millions)	Percent
IBM	1,280	17
Andersen Consulting	686 (1)	10
EDS	644 (2)	9
SAIC	569	8
DEC	525	8
CSC	440	6

1. Excludes equipment revenues
2. Non-GM business

EXHIBIT III-12

Leading Systems Integration Vendors Western Europe, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
CAP Gemini Sogeti	France	330	11.8
IBM	U.S.	320	11.4
Andersen Consulting	U.S.	300	10.7
Siemens Nixdorf	Germany	110	3.9
Sema Group	France	105	3.8
Logica	U.K.	90	3.2
SD-Scicon	U.K.	90	3.2
ICL	U.K.	65	2.3
Unisys	U.S.	60	2.1
Bull	France	50	1.8

EXHIBIT III-13

Leading Systems Integration Vendors United Kingdom, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
Andersen Consulting	U.S.	120	15.6
Hoskyns (CGS)	U.K. (F)	75	9.7
SD-Scicon	U.K.	75	9.7
IBM	U.S.	55	7.1
ICL (Fujitsu)	U.K. (Japan)	55	7.1
Logica	U.K.	55	7.1
ACT Group	U.K.	40	5.2
Sema Group	France	40	5.2
Data Sciences	U.K.	30	3.9
BT	U.K.	30	3.9

D**Professional Services**

Exhibit III-14 lists the market shares of the proposed consortium members in the professional services market.

Exhibits III-15, III-16 and III-17 list the market shares of the leading vendors in each of the major geographic regions: the U.S., Europe and the U.K.

The consortium considered as a single entity would be ranked in first place in the U.S. and the U.K. and in third place in Europe.

However, the professional services market is highly fragmented, consisting of small systems development projects typically performed by a single vendor. Hence, it is difficult to appreciate the relevance of a consortium approach to this business.

EXHIBIT III-14

Market Shares (%)
Professional Services, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	0.4	-	1.0	5.6
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	1.1	2.7	0.5	0.8
INET	0.1	0.3	-	-
SAIC	0.5	0.8	0.2	0.3
Sema Group	0.8	-	1.8	3.6
TOTAL*	2.9	3.7	3.4	10.3

* Totals may not add due to rounding.

EXHIBIT III-15

**Largest U.S. Professional
Services Vendors, 1990**

Rank	Vendor	Professional Services Revenues (\$ Millions)	Market Share (%)
1	IBM	490	2.9
2	EDS	468	2.8
3	CSC	448	2.7
4	Andersen Consulting	310	1.8
5	Logicon	221	1.3
6	PRC	207	1.2
7	CGA	201	1.2
8	DEC	195	1.2
9	NYNEX/AGS	194	1.2
10	CTG	191	1.1

EXHIBIT III-16

Leading Professional Services Vendors Europe, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
CAP Gemini Sogeti	France	985	4.5
IBM	U.S.	950	4.4
Sema Group	France	380	1.8
Digital	U.S.	370	1.7
Andersen Consulting	U.S.	360	1.7
Volmac	Netherlands	340	1.6
Finsiel	Italy	290	1.3
Olivetti	Italy	250	1.2
BT	U.K.	220	1.0
Unisys	U.S.	210	1.0

EXHIBIT III-17

Leading Professional Services Vendors United Kingdom, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
BT	U.K.	220	5.6
IBM	U.S.	170	4.4
Sema Group	France	140	3.6
Coopers & Lybrand	U.S.	120	3.2
Andersen Consulting	U.S.	110	2.9
ICL (Fujitsu)	UK. (Japan)	100	2.7
Price Waterhouse	U.S.	100	2.7
Misys	U.K.	85	2.2
PA Consulting	U.K.	85	2.2
Hoskyns (CGS)	U.K. (France)	85	2.2

E

Network Services

Exhibit III-18 lists the network services market shares for the proposed consortium members. Exhibits III-19, III-20, and III-21 list the market shares of the leading vendors in the U.S., Europe and the U.K.

In the U.S. the proposed consortium would not be ranked in the top five vendors. In Europe, the consortium would be ranked fourth. In the U.K. the consortium would be ranked second, but would not significantly increase the market share of its leading member there, namely BT.

EXHIBIT III-18

Market Shares (%)
Network Services, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	2.2	2.7	2.3	7.5
Cable & Wireless	0.5	0.2	0.5	1.3
Computer Sciences Corp.	0.6	0.9	0.3	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	-	-	-	-
TOTAL	3.3	3.8	3.0	8.8

* Totals may not add due to rounding.

EXHIBIT III-19

U.S. Network Services Market
Leading Vendors, 1990

Rank	Estimated Vendor	Market Revenue (\$ Millions)	Share (Percent)
1	TRW (including Chilton)	700	9
2	Dow Jones (Telerate)	425	5
3	Dun & Bradstreet	415	5
4	Mead Data Central	410	5
5	Equifax	390	5

EXHIBIT III-20

Leading Network Services Vendors Europe, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
Reuters	U.K.	1,100	27.5
Telerate	U.S.	240	6.0
Dun & Bradstreet	U.S.	170	4.3
Telekurs	Switzerland	110	2.8
GEIS	U.S.	105	2.6
Infonet	Belgium	100	2.5
Citicorp	U.S.	95	2.4
BT/Tymnet	U.K.	90	2.3
GSI	France	85	2.1
France Telecom	France	75	1.9

EXHIBIT III-21

Leading Network Services Vendors United Kingdom, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)	Market Share (%)
Reuters	U.K.	320	26.7
Telerate	U.S.	90	7.5
BT/Tymnet	U.K.	90	7.5
AT&T Istel	U.S.	55	4.6
Citicorp	U.S.	55	4.6

F

Other

Exhibits III-22 to III-25 list the proposed consortium members' market shares in the remaining delivery modes:

- Processing services
- Turnkey systems
- Systems software products
- Applications software products

All of the consortium members show low levels of activity in each of these areas.

EXHIBIT III-22

Market Shares (%)
Processing Services, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	0.2	0.5	-	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	-	-	-	-
TOTAL	0.2	0.5	-	-

EXHIBIT III-23

Market Shares (%)
Turnkey Systems, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	0.2	0.3	0.1	0.2
INET	0.1	0.2	-	-
SAIC	-	-	-	-
Sema Group	0.1	-	0.3	-
TOTAL	0.4	0.5	0.4	0.2

EXHIBIT III-24

Market Shares (%)
Systems Software Products, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	-	-	-	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	< 0.1	-	0.1	0.3
TOTAL	< 0.1	-	0.1	0.3

EXHIBIT III-25

Market Shares (%)
Applications Software Products, 1990

Company	World-Wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	-	-	-	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	0.1	-	0.3	0.5
TOTAL	0.1	-	0.3	0.5

Appendix A

Information Services Market, 1990-1996

EXHIBIT A-1

Information Services Market

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	13	14	16	14	27
Rest of Europe	55	64	74	-	132
Europe - Total	68	78	90	15	159
U.S.	100	113	125	12	201
Rest of World	40	45	54	-	101
Worldwide Total	208	236	269	14	461

EXHIBIT A-2

Systems Operations

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	0.36	0.88*	1.09*	24	2.6*
Rest of Europe	0.84	1.42*	1.71*	-	3.9*
Europe - Total	1.2	2.3*	2.8*	23	6.5*
U.S.	7.2	10.0*	11.7*	17	22.2*
Rest of World	3.2	3.6	4.3	-	8.7
Worldwide Total	11.6	15.9	18.8	19	37.4

* Includes network management and desktop services

EXHIBIT A-3

Systems Integration

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	0.77	0.87	1.0	15	1.8
Rest of Europe	2.03	2.53	3.0	-	6.4
Europe - Total	2.8	3.4	4.0	19	8.2
U.S.	6.9	7.7	9.1	18	17.4
Rest of World	3.3	3.9	4.7	-	10.4
Worldwide Total	13.0	15.0	17.8	19	36.0

EXHIBIT A-4

Professional Services

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	3.9	4.2	4.8	15	8.4
Rest of Europe	17.8	20.5	24.3	-	43.6
Europe - Total	21.7	24.7	29.1	16	52.0
U.S.	16.8	17.8	19.4	9	28.0
Rest of World	11.5	14.5	17.5	-	35.0
Worldwide Total	50.0	57.0	66.0	15	115.0

EXHIBIT A-5

Network Services

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	1.2	1.4	1.6	16	3.0
Rest of Europe	2.8	3.3	4.0	-	8.6
Europe - Total	4.0	4.7	5.6	20	11.6
U.S.	8.1	9.4	10.8	16	20.0
Rest of World	1.7	1.9	2.3	-	5.1
Worldwide Total	13.8	16.0	18.7	18	36.7

EXHIBIT A-6

Turnkey Systems

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	2.3	2.6	2.9	12	4.6
Rest of Europe	8.7	9.4	11.1	-	19.4
Europe - Total	11.0	12.0	14	15	24.0
U.S.	10.0	11.0	13	9	17.0
Rest of World	5.0	6.0	6	-	10.0
Worldwide Total	26.0	29.0	33	12	51.0

EXHIBIT A-7

Systems Software Products

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	2.0	2.1	2.3	8	3.2
Rest of Europe	9.0	10.9	11.7	-	18.8
Europe - Total	11.0	13.0	14.0	11	22.0
U.S.	16.0	18.0	20.0	12	32.0
Rest of World	4.0	4.0	5.0	-	8.0
Worldwide Total	31.0	35.0	39.0	12	62.0

EXHIBIT A-8

Applications Software Products

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	1.1	1.3	1.5	14	2.5
Rest of Europe	6.5	7.8	9.3	-	18.5
Europe - Total	7.6	9.1	10.8	18	21.0
U.S.	18.0	20.0	22.0	14	38.0
Rest of World	3.4	4.9	6.2	-	12.0
Worldwide Total	29.0	34.0	39.0	16	71.0

EXHIBIT A-9

Processing Services

	1990 (\$ Billions)	1991 (\$ Billions)	1992 (\$ Billions)	1991-1996 CAGR (%)	1996 (\$ Billions)
U.K.	1.1	1.2	1.3	8	1.7
Rest of Europe	7.7	8.2	8.8	-	11.6
Europe - Total	8.8	9.4	10.1	7	13.3
U.S.	17.0	18.3	19.7	8	26.6
Rest of World	7.2	7.3	8.2	-	12.1
Worldwide Total	33.0	35.0	38.0	8	52.0

Appendix B

Vendor Revenues

EXHIBIT B-1

Revenues (\$ Millions) Information Services, 1990

Company	World- wide	U.S.	Europe	U.K.
British Telecom	585	220	350	350
Cable & Wireless	75	15	30	15
Computer Sciences Corp.	1,738	1,534	204	65
INET	70	70	-	-
SAIC	860	704	50	10
Sema Group	615	-	600	200
TOTAL	3,943	2,543	1,234	640

EXHIBIT B-2

**Revenues (\$ Millions)
Systems Operations, 1991**

Company	World- wide	U.S.	Europe	U.K.
British Telecom	25	4	20	15
Cable & Wireless	30	20	10	10
Computer Sciences Corp.	540	500	40	15
INET	8	8	-	-
SAIC	40	40	-	-
Sema Group	100	-	100	90
TOTAL	743	572	170	130

EXHIBIT B-3

**Revenues (\$ Millions)
Systems Integration, 1990**

Company	World- wide	U.S.	Europe	U.K.
British Telecom	30	-	30	30
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	509	439	70	20
INET	5	5	-	-
SAIC	595	569	10	-
Sema Group	110	-	105	40
TOTAL	1,249	1,013	215	90

EXHIBIT B-4

**Revenues (\$ Millions)
Professional Services, 1990**

Company	World- wide	U.S.	Europe	U.K.
British Telecom	220	-	220	220
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	547	448	99	30
INET	45	45	-	-
SAIC	225	135	40	10
Sema Group	390	-	380	140
TOTAL	1,427	628	739	400

EXHIBIT B-5

**Revenues (\$ Millions)
Network Services, 1990**

Company	World- wide	U.S.	Europe	U.K.
British Telecom	310	220	90	90
Cable & Wireless	65	15	20	15
Computer Sciences Corp.	80	70	10	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	-	-	-	-
TOTAL	455	305	120	105

EXHIBIT B-6

**Revenues (\$ Millions)
Turnkey Systems, 1990**

Company	World-wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	52	32	15	5
INET	15	15	-	-
SAIC	-	-	-	-
Sema Group	30	-	30	-
TOTAL	97	47	45	5

EXHIBIT B-7

**Revenues (\$ Millions)
Systems Software Products, 1990**

Company	World-wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	-	-	-	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	15	-	15	5
TOTAL	15	-	15	5

EXHIBIT B-8

Revenues (\$ Millions)
Applications Software Products, 1990

Company	World- wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	-	-	-	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	25	-	25	5
TOTAL	25	-	25	5

EXHIBIT B-9

Revenues (\$ Millions)
Processing Services, 1990

Company	World- wide	U.S.	Europe	U.K.
British Telecom	-	-	-	-
Cable & Wireless	-	-	-	-
Computer Sciences Corp.	80	80	-	-
INET	-	-	-	-
SAIC	-	-	-	-
Sema Group	-	-	-	-
TOTAL	80	80	-	-

Appendix C

Definition of Terms

A

Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. It is used for all U.S. programs. The structure defined in Exhibit 1 is also used in Europe and for the worldwide forecast.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

For 1992 INPUT has added one delivery mode and defined three new submodes to its Information Services Industry Structure:

- *Equipment Services* has been added as the ninth delivery mode. INPUT has forecasted the equipment maintenance, support and related services market through its Customer Services Programs for a number of years. Starting in 1992, the equipment services portion of the customer services market will be included in the total information services industry as defined by INPUT. Other portions of this market (such as software support) are already included.
- Two new submodes have been defined in the *Systems Operations* delivery mode - *desktop services* and *network management*. They are defined on pages 5 and 6.
- A fourth submode has been defined within the Professional Services delivery mode—*applications management*. This change reflects a shift in the way some software development and maintenance services are purchased. A complete definition is provided on page 6.

A series of definitions for computer equipment have also been added.

Changes from the 1991 INPUT *Definitions of Terms* are indicated with a ☆.

B

Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)
- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)
- Packaged software products, including systems software or applications software products (called *Software Products*)
- People services that support users in developing and operating their own information systems (called *Professional Services*)
- The combination of products (software and equipment) and services where the vendor assumes total responsibility for the development of a custom integrated solution to an information systems need (called *Systems Integration*)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)
- Services that support the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange (called *Network Applications*)
- Services that support the access and use of public and proprietary information such as on-line data bases and news services (called *Electronic Information Services*)
- Services that support the operation of computer and digital communication equipment (called *Equipment Services*)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., electronic data interchange services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

2. Market Forecasts/User Expenditures

All information services market forecasts are estimates of *User Expenditures* for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)
- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Non-captive Information Services User Expenditures are expenditures that go to vendors that have a different parent corporation than the user. It is these expenditures which constitute the information services market analyzed by INPUT and that are included in INPUT forecasts.

3. Delivery Modes

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the nine delivery modes defined by INPUT, six are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*
- *Equipment Services*

The remaining three delivery modes represent combinations of these products and services, combined with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section C describes the delivery modes and their structure in more detail.

4. Market Sectors

Market Sectors or markets are groupings or categories of the buyers of information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc. These are called “industry-specific” markets.
- *Functional Application* markets, such as Human Resources, Accounting, etc. These are called “cross-industry” markets.
- *Other* markets, which are neither industry- nor application-specific, such as the market for systems software products and much of the on-line data base market.

Specific market sectors used by INPUT are defined in Section E, below.

5. Trading Communities

Information technology is playing a major role in re-engineering, not just companies but the value chain or *Trading Communities* in which these companies operate. This re-engineering is resulting in electronic commerce emerging where interorganizational electronic systems facilitate the business processes of the trading community.

- A trading community is the group or organizations—commercial and non-commercial—involved in producing a good or services.
- Electronic commerce and trading communities are addressed in INPUT's EDI and Electronic Commerce Program.

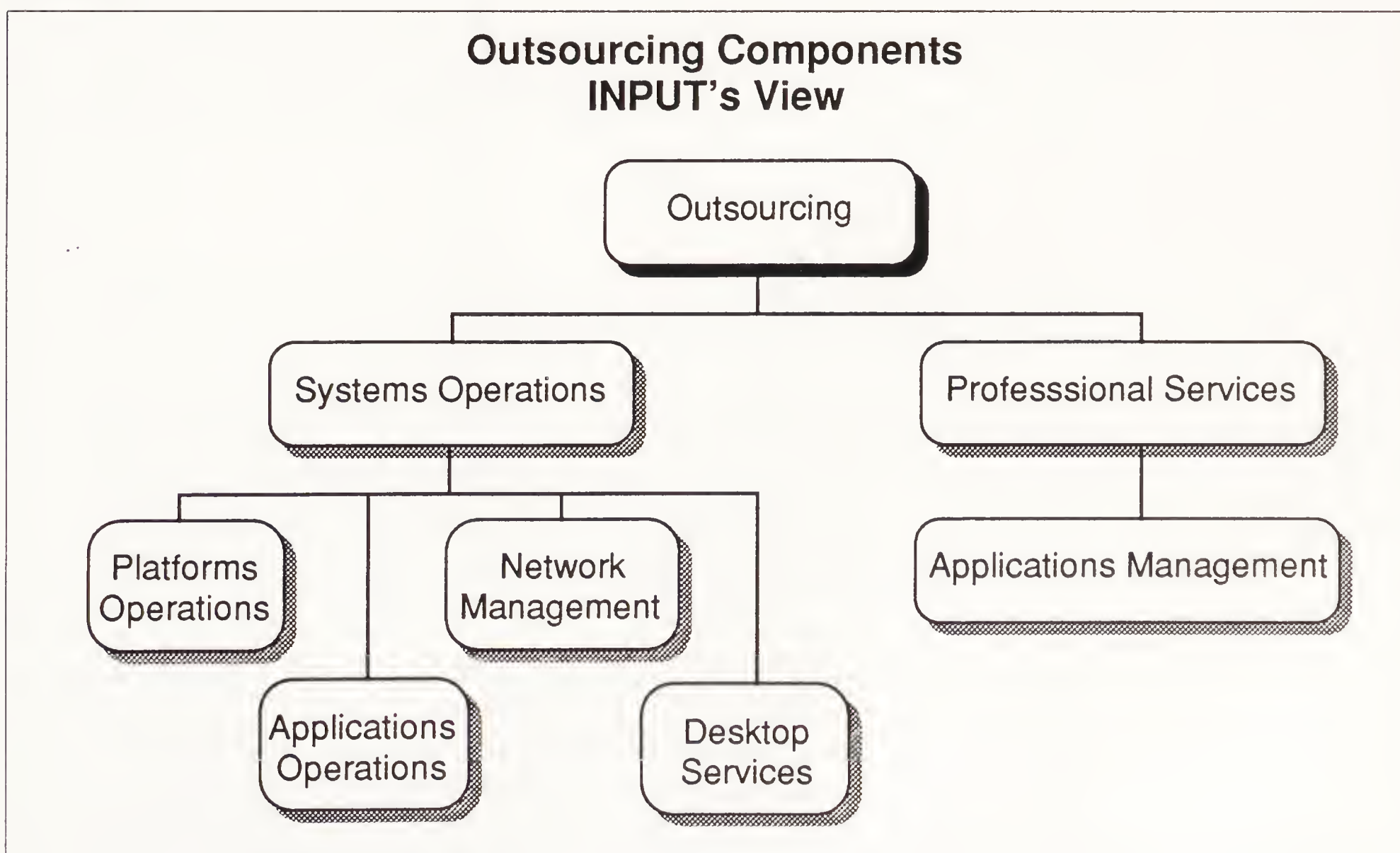
6. Outsourcing

Over the past few years a major change has occurred in the way clients are buying some information services. The shift has been labeled *outsourcing*.

INPUT views outsourcing as a change in the form of the client/vendor relationship. Under an outsourcing relationship, all or a major portion of the information systems function is contracted to a vendor in a long-term relationship. The vendor is responsible for the performance of the function.

INPUT considers the following submodes to be outsourcing-type relationships and in aggregate to represent the outsourcing market. See Exhibit 1. Complete definitions are provided in Section C of this document. INPUT provides these forecasts as part of the corresponding delivery modes.

EXHIBIT 1



- *Platform Systems Operations* - The vendor is responsible for managing and operating the client's computer systems.
- *Applications System Operations* - The vendor is responsible for developing and/or maintaining a client's applications as well as operating the computer systems.
- ☆ *Network Management* - The vendor assumes full responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client.
- ☆ *Applications Management/Maintenance* - The professional services vendor has full responsibility for developing and/or maintaining some or all of the applications systems that a client uses to support business operations. The services are provided on a long-term contractual basis.
- ☆ *Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity between the personal computers and/or intelligent workstations in the client organization. The services may also include performing the help-desk function. The services are provided on a long-term contractual basis.

C

Delivery Modes and Submodes

Exhibit 2 provides the overall structure of the information services industry as defined and used by INPUT. This section of *Definition of Terms* provides definitions for each of the delivery modes and their submodes or components.

1. Software Products

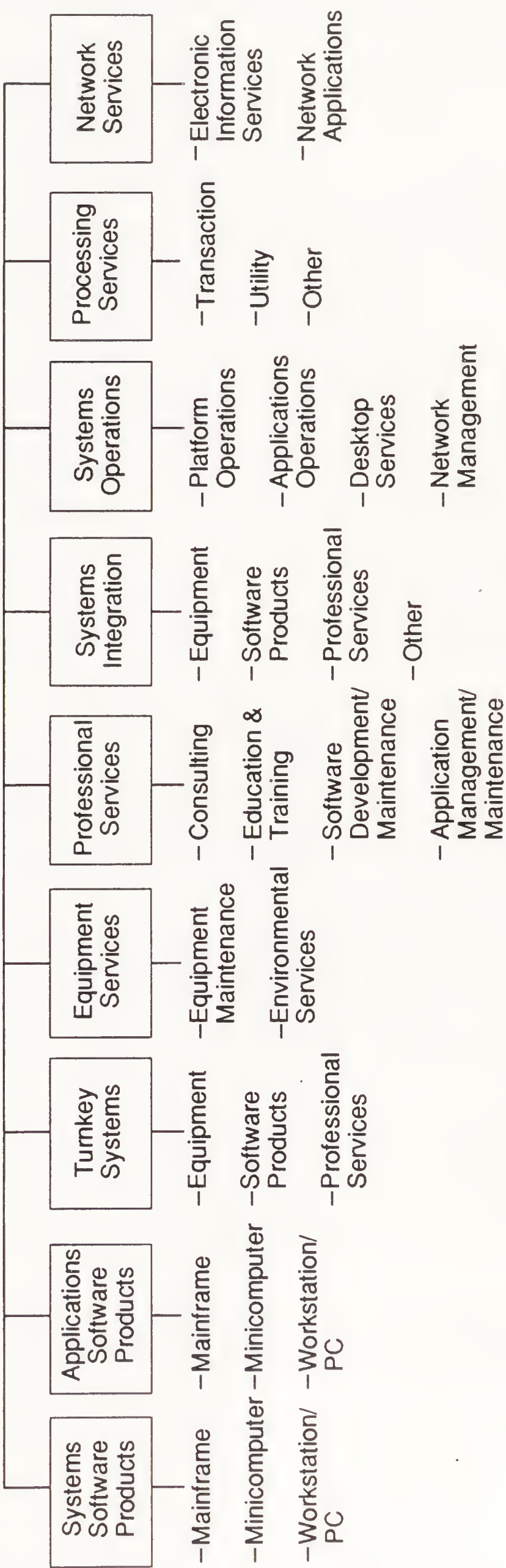
INPUT divides the software products market into two delivery modes: systems software and applications software.

The two delivery modes have many similarities. Both involve purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if part of the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the professional services delivery mode. Fees for work related to education, consulting, and/or custom modification of software products are also counted as professional services, provided such fees are charged separately from the price of the software product itself.

EXHIBIT 2

Information Services Industry Structure—1992

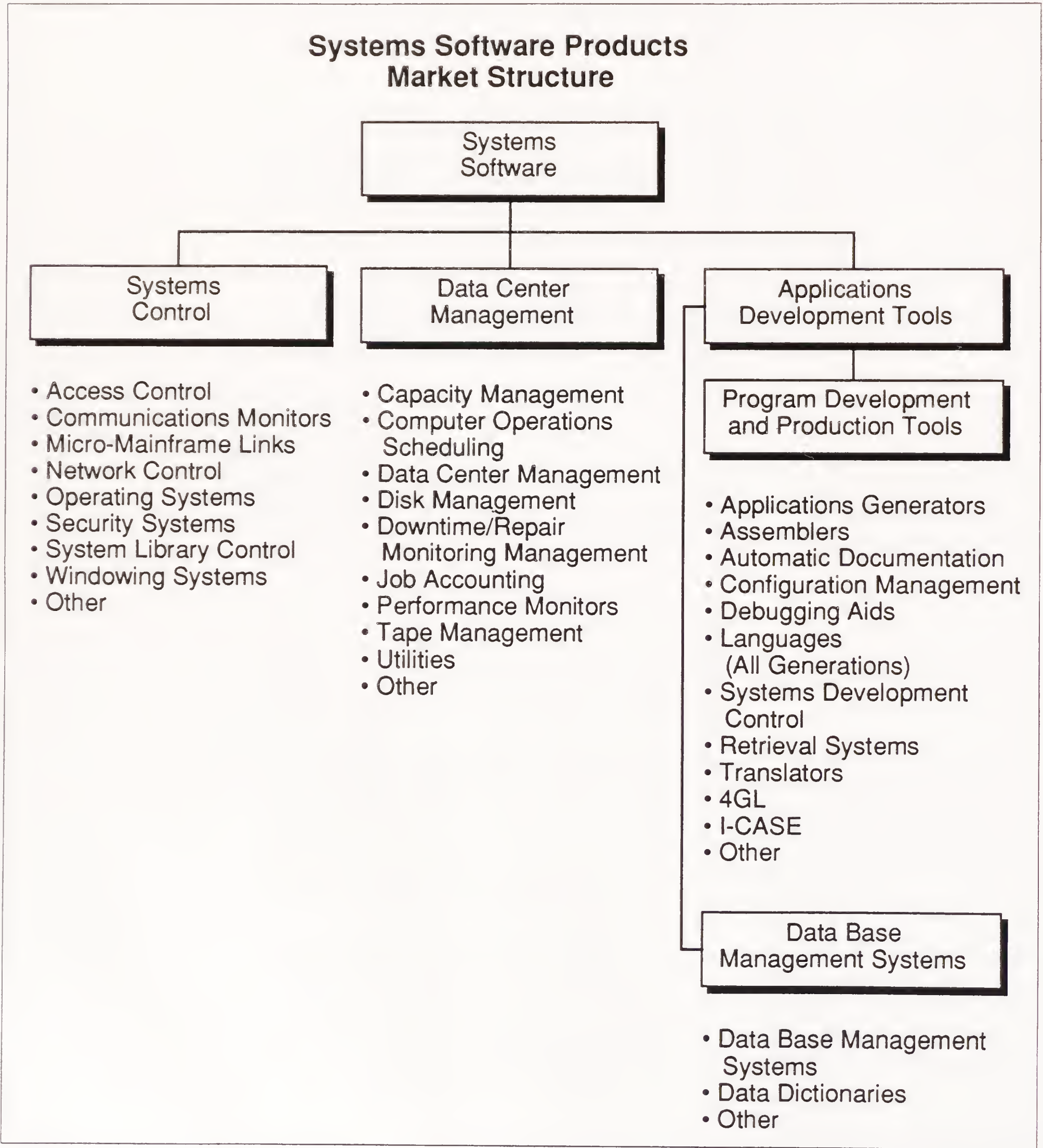


Source: INPUT

a. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. INPUT divides systems software products into three submodes. See Exhibit 3.

EXHIBIT 3



- *Systems Control Products* - Software programs that manage computer system resources and control the execution of programs. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.
- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.
- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids.

INPUT also forecasts the systems software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

b. Applications Software Products

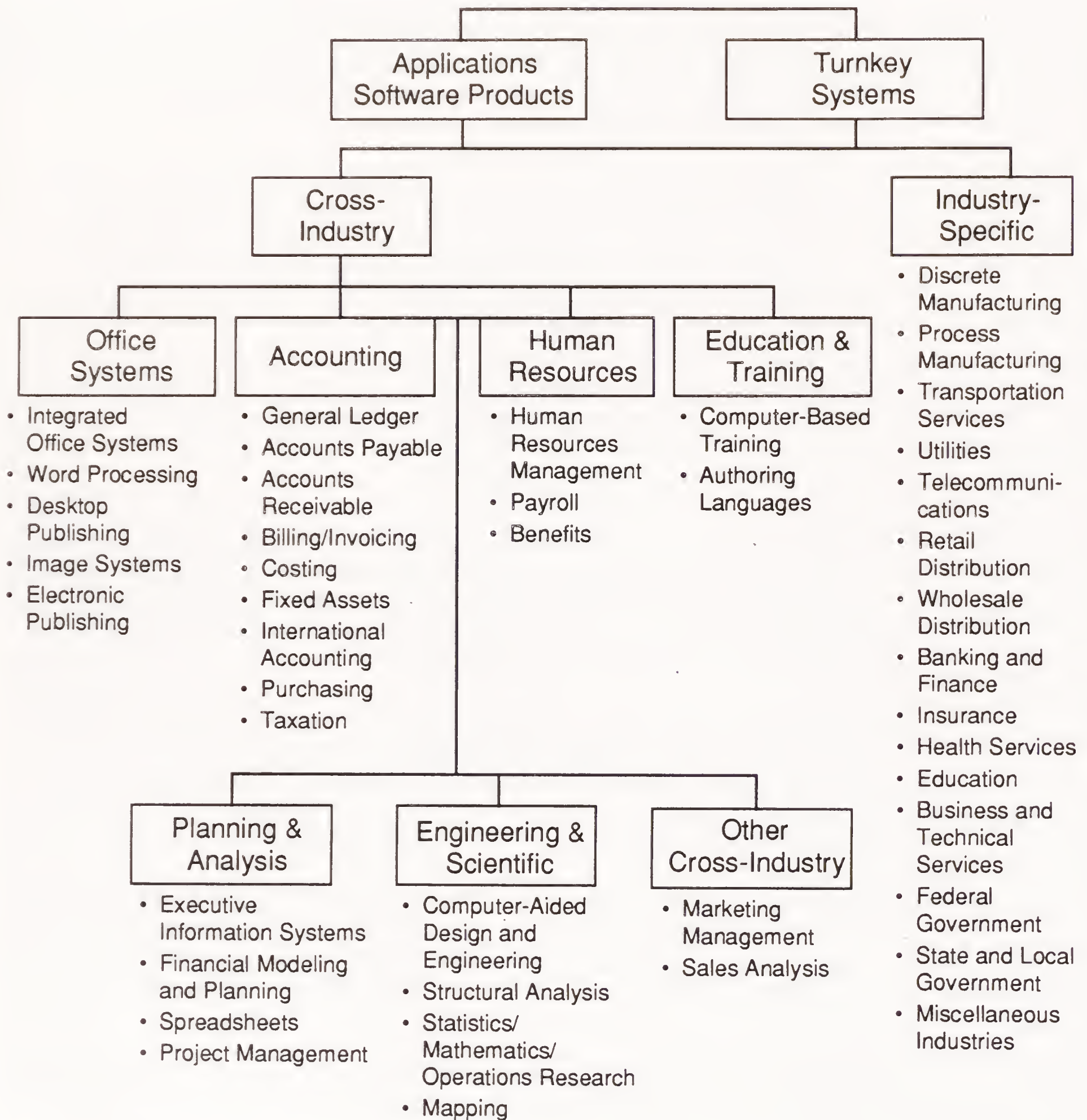
Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two groups of market sectors. (See Exhibit 4.)

- *Industry Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.
- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

EXHIBIT 4

Application Products and Turnkey Systems



2. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged applications software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and professional services provided. INPUT categorizes turnkey systems into two groups of market sectors as it does for applications software products. (See Exhibit 4.)

Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

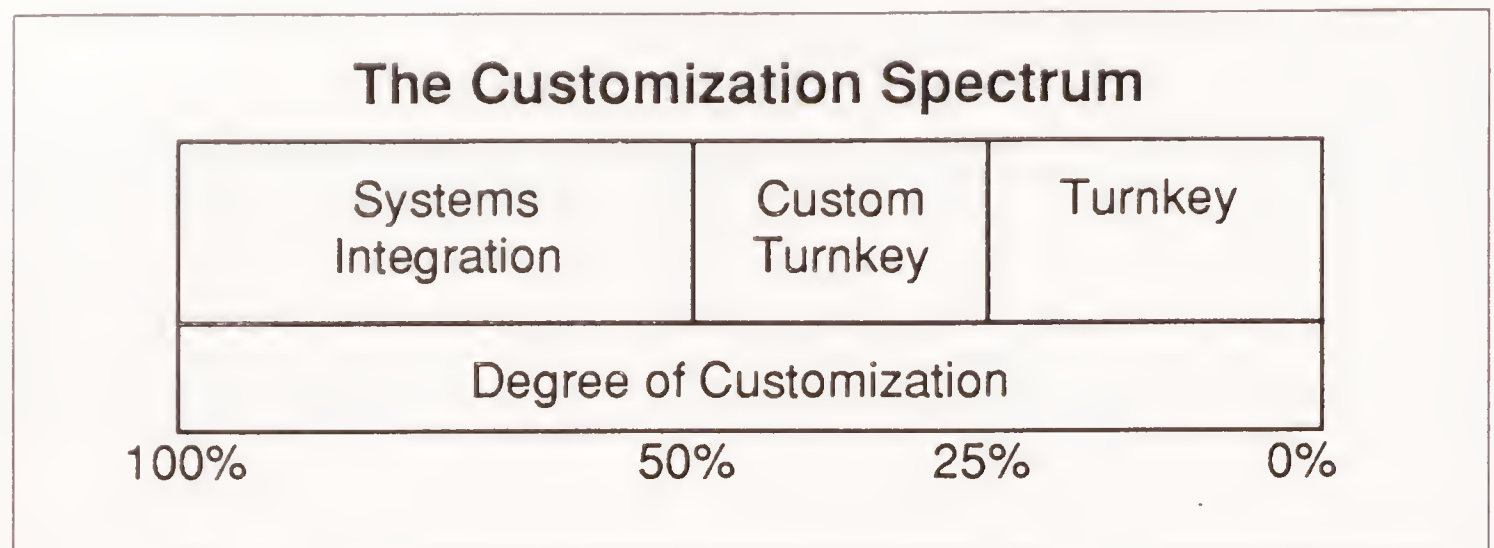
- *Value-Added Reseller (VAR)*: A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services, software support, and applications upgrades.

Turnkey systems have three components:

- Equipment - computer hardware supplied as part of the turnkey system
- Software products - prepackaged systems and applications software products
- Professional services - services to install or customize the system or train the user, provided as part of the turnkey system sale

Exhibit 5 contrasts turnkey systems with systems integration. Turnkey systems are based on available software products that a vendor may modify to a modest degree.

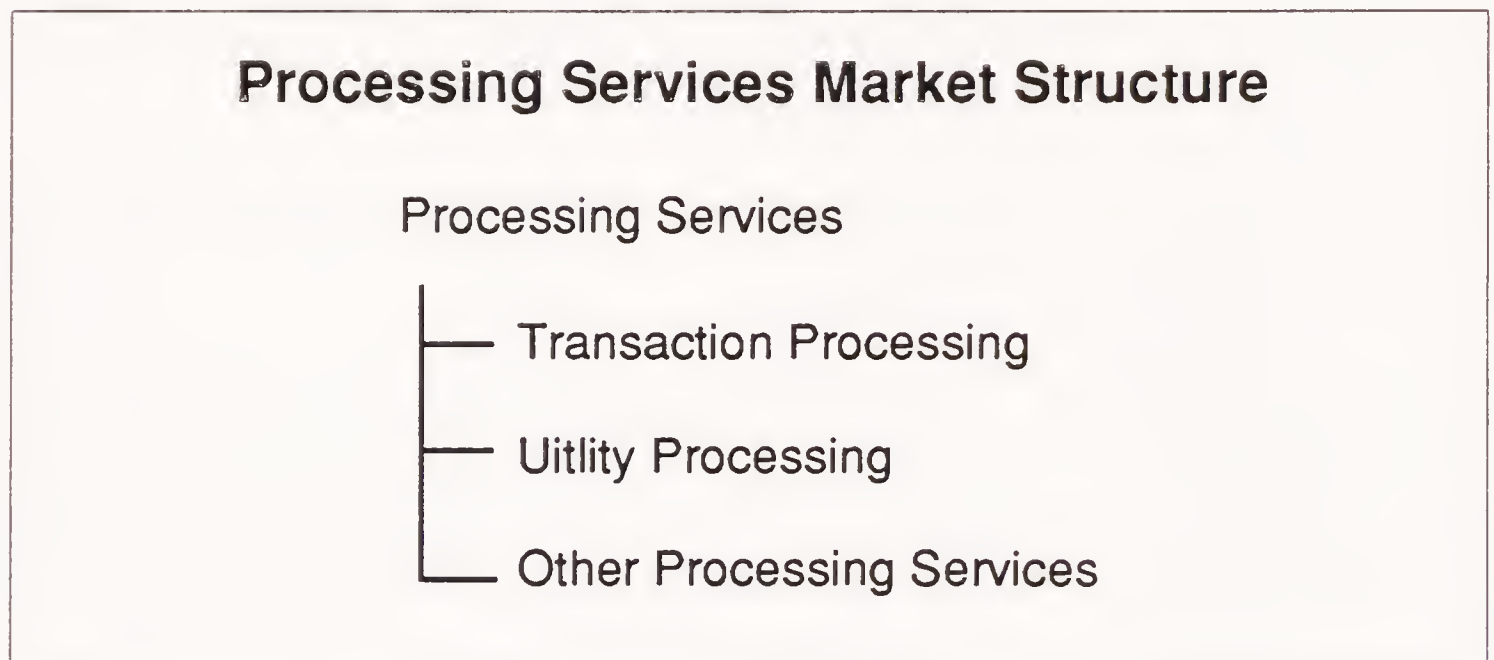
EXHIBIT 5



3. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and “other” processing services. See Exhibit 6.

EXHIBIT 6



- *Transaction Processing* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at the vendor site or customer site to process specific applications and update client data bases. The application software is typically provided by the vendor.
- *Utility Processing* - Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), enabling clients to develop and/or operate their own programs or process data on the vendor’s system.
- *Other Processing Services* - Vendor provides service—usually at the vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

4. Systems Operations

Systems operations as a delivery mode was introduced in the 1990 Market Analysis and Systems Operations programs. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 1992 the submodes have been defined as follows.

Systems operations involves the operation and management of all or a significant part of the client's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes where the difference is whether the support of applications, as well as data center operations, is included.

- *Platform systems operations* - The vendor manages and operates the computer systems, to perform the client's business functions, without taking responsibility for the client's application systems.
- *Applications systems operations* - The vendor manages and operates the computer systems to perform the client's business functions, and is also responsible for maintaining, or developing and maintaining, the client's application systems.
- ☆ *Network Management* - The vendor assumes responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client. A network management outsourcing contract may include only the management services or the full costs of the communications services and equipment plus the management services.
- ☆ *Desktop Services* - The vendor assumes responsibility for the deployment, maintenance, and connectivity among the personal computers and/or workstations in the client organization. The services may also include performing the help-desk function. Equipment as well as services can be part of a desktop services outsourcing contract.

Note: This type of client service can also be provided through traditional professional services where the contractual criteria of outsourcing are not present.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the client's information systems environment (equipment, networks, applications systems), either at the client's site or the vendor's site.

Note: In the federal government market, systems operation services are also defined by equipment ownership with the terms "COCO" (Contractor-Owned, Contractor-Operated), and "GOCO" (Government-Owned, Contractor-Operated).

5. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit 7.)

The components of a systems integration project are the following:

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.
- *Software products* - prepackaged applications and systems software products.
- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance.
- *Other services* - most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

EXHIBIT 7

Products/Services in Systems Integration Projects

Equipment

- Information systems
- Communications

Software Products

- Systems software
- Applications software

Professional Services

- Consulting
 - Feasibility and trade-off studies
 - Selection of equipment, network and software
- Program/project management
- Design/integration
 - Systems design
 - Installation of equipment, network, and software
 - Demonstration and testing
- Software development
 - Modification of software packages
 - Modification of existing software
 - Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services

- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

6. Professional Services

This category includes four submodes: consulting, education and training, software development, and applications management. Exhibit 8 provides additional detail.

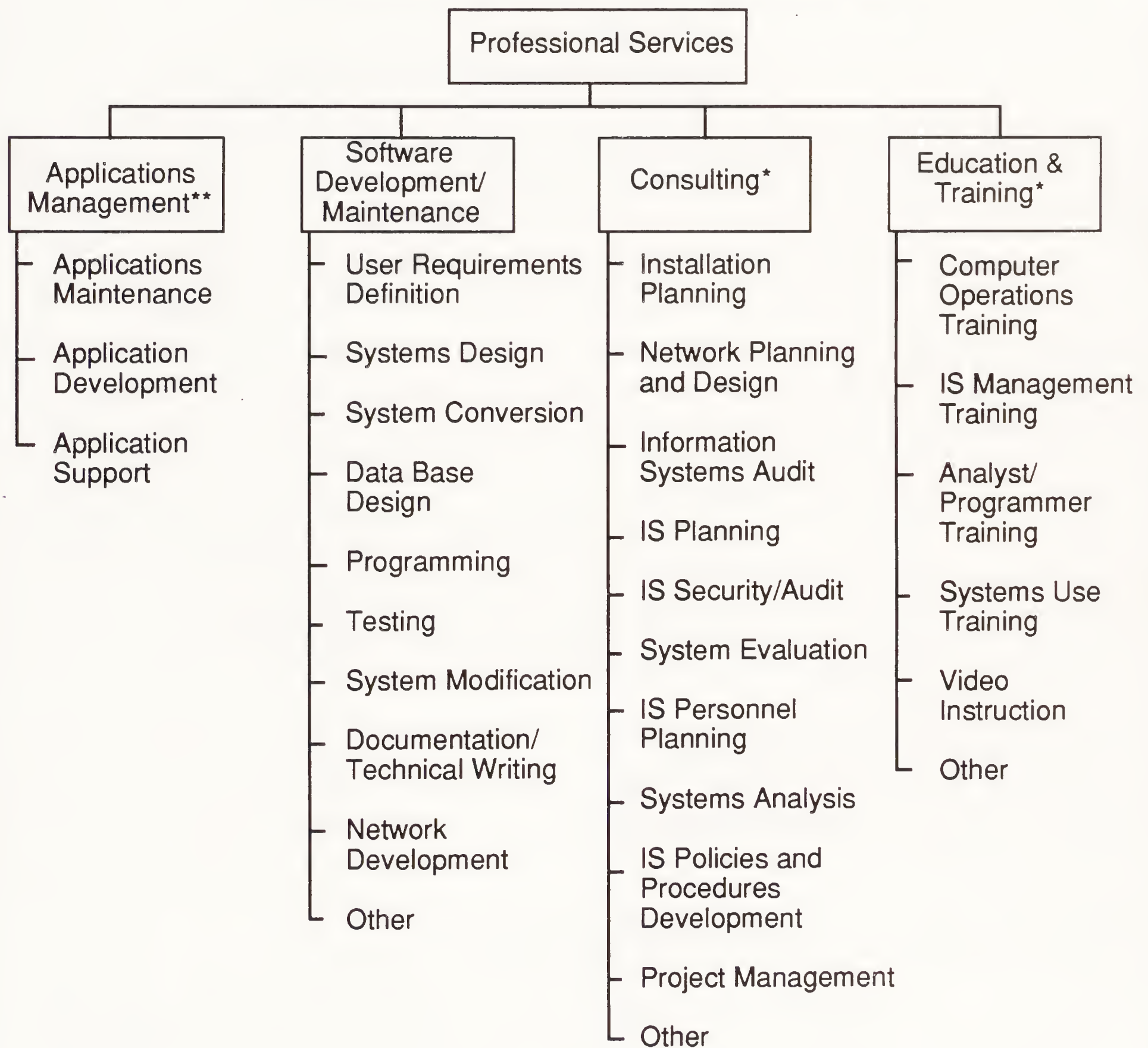
- *Consulting:* Services include management consulting (related to information systems), information systems re-engineering, information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.
- *Education and Training:* Services that provide training and education or the development of training materials related to information systems and services for the information systems professional and the user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation. Education and training provided by school systems are not included. General education and training products are included as a cross-industry market sector.
- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.
- ☆ *Applications Management:* The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

An applications management contract differs from traditional software development in the form of the client/vendor relationship. Under traditional software development services the relationship is project based. Under applications management it is time and function based.

These services may be provided in combination or separately from platform systems operations.

EXHIBIT 8

Professional Services Market Structure



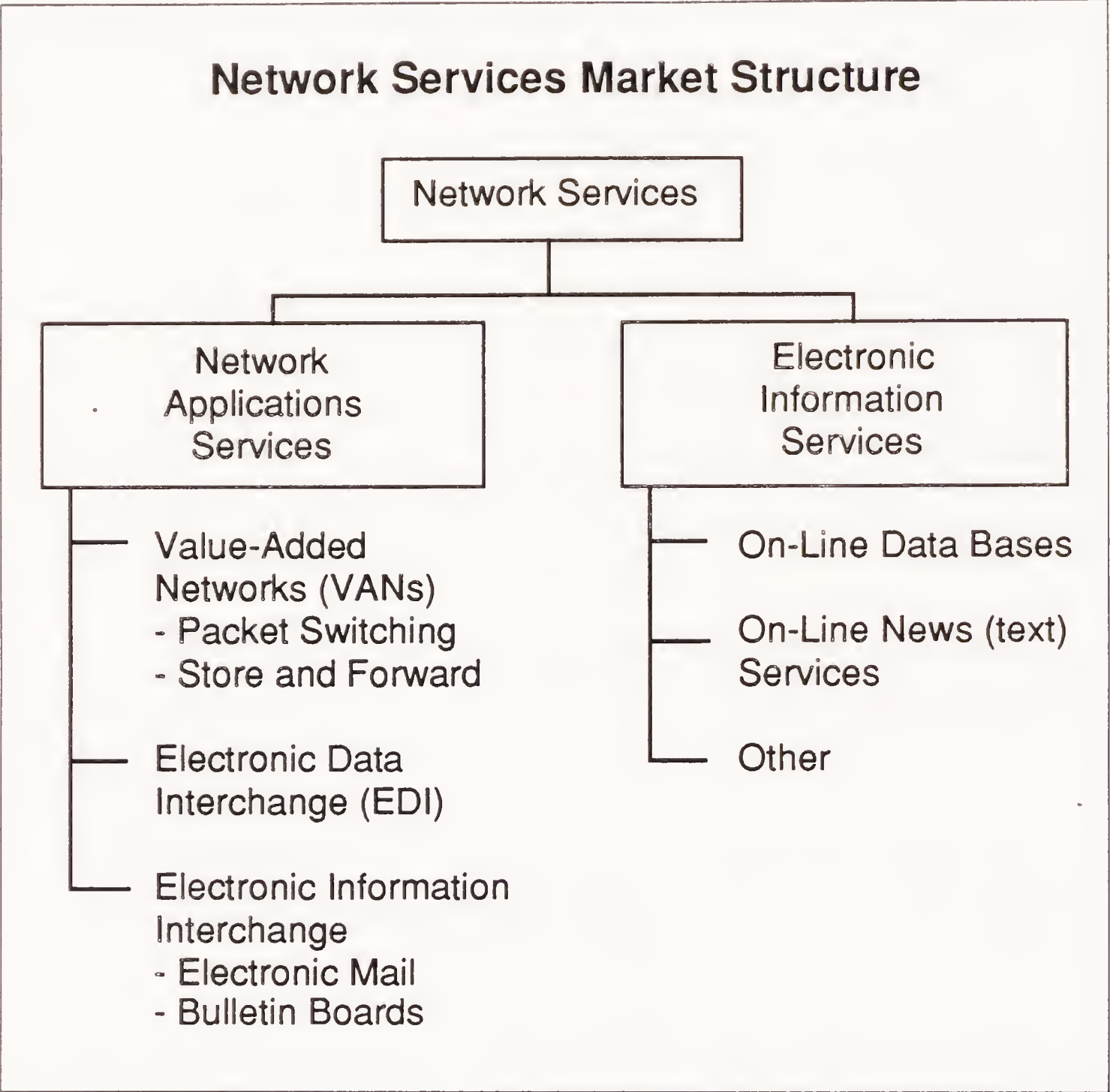
*Related to computer systems, topics, or issues

**Vendor assumes full responsibility on contracted longer term basis

7. Network Services

Network services are a variety of telecommunications-based functions and operations. Network service includes two submodes, as shown in Exhibit 9.

EXHIBIT 9



a. Electronic Information Services

Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers.

Users inquire into and extract information from the data bases. They may load extracted data into their own computer systems; the vendor does not provide data processing or manipulation capability as part of the electronic information service and users cannot update the vendor's data bases. However, the vendor may offer other services (network applications or processing services) that do offer processing or manipulation capability.

The two kinds of electronic information services are:

- *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.
- Unstructured, primarily textual information on people, companies, events, etc. These are often news services.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

b. Network Applications

Value-Added Network Services (VAN Services) - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

Electronic Data Interchange (EDI) - Application-to-application electronic exchange of business data between trade partners or facilitators using a telecommunications network.

Electronic Information Interchange- The transmission of messages across an electronic network managed by a services vendor, including electronic mail, voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

8. Equipment Services

- ☆ The equipment services delivery mode includes two submodes. Both deal with the support and maintenance of computer equipment.
- ☆ *Equipment Maintenance* - Services provided to repair, diagnose problems and provide preventive maintenance both on-site and off-site for computer equipment. The costs of parts, media and other supplies are excluded. These services are typically provided on a contract basis.
- ☆ *Environmental Services* - Composed of equipment and data center related special services such as cabling, air conditioning and power supply, equipment relocation and similar services.

D

Computer Equipment

- ☆ These definitions have been included to provide the basis for market segmentation in the software products markets.
- ☆ *Computer Equipment* - Includes all computer and telecommunications equipment that can be separately acquired with or without installation by the vendor and not acquired as part of an integrated system. Unless otherwise noted in an INPUT forecast, computer equipment is only included where it is part of the purchase of services or software products (e.g., turnkey systems and systems integration).
- ☆ *Peripherals* - Includes all input, output, communications, and storage devices (other than main memory) that can be channel connected to a processor, and generally cannot be included in other categories such as terminals.
- ☆ *Input Devices* - Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analog-to-digital converters.
- ☆ *Output Devices* - Includes printers, CRTs, projection television screens, micrographics processors, digital graphics, and plotters
- ☆ *Communication Devices* - Includes modem, encryption equipment, special interfaces, and error control
- ☆ *Storage Devices* - Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories

- ☆ *Computer Systems* - Includes all processors from personal computers to supercomputers. Computer systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices and processors or CPUs not provided as part of an integrated (turnkey) system.
- ☆ *Personal computers* - Smaller computers using 8-, 16-, or 32-bit computer technology. Generally designed to sit on a desktop and are portable for individual use. Price generally less than \$5,000.
- ☆ *Workstations* - High-performance, desktop, single-user computers often employing Reduced Instruction Set Computing (RISC). Workstations provide integrated, high-speed, local network-based services such as data base access, file storage and back-up, remote communications, and peripheral support. These products usually cost from \$5,000 to \$15,000.
- ☆ *Minicomputer or midsize computers* - Minicomputers are generally priced from \$15,000 to \$350,000. Many of the emerging client/server computers are in this category.
- ☆ *Mainframe or large computers* - Traditional mainframe and supercomputers costing more than \$350,000.

E

Sector Definitions

1. Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit 10.

INPUT includes all delivery modes except systems software products and equipment services in industry market sectors. See Exhibit 9 and section E-3 (Delivery Mode Reporting by Sector).

Note: SIC code 88 is Personal Households. INPUT does not currently analyze or forecast information services in this market sector.

EXHIBIT 10

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetallic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

EXHIBIT 10 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services
Retail Distribution	52xx	Building materials
	53xx	General merchandise stores
	54xx	Food stores
	55xx	Automotive dealers, gas stations
	56xx	Apparel and accessory stores
	57xx	Home furniture, furnishings and accessory stores
	58xx	Eating and drinking places
	59xx	Miscellaneous retail
Wholesale Distribution	50xx	Wholesale trade - durable goods
	51xx	Wholesale trade - nondurable goods
Banking and Finance	60xx	Depository institutions
	61xx	Nondepository institutions
	62xx	Security and commodity brokers, dealers, exchanges and services
	67xx	Holding and other investment offices
Insurance	63xx	Insurance carriers
	64xx	Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

EXHIBIT 10 (CONT.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

2. Cross-Industry Sector Definitions

INPUT has identified seven cross-industry market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc.

- In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry.
- INPUT only includes the turnkey systems, applications software products, and transaction processing services in the cross-industry sectors.

The seven cross-industry markets are:

Accounting - consists of applications software products and information services that serve such functions as:

- General ledger
 - Financial management
 - Accounts payable
 - Accounts receivable
 - Billing/invoicing
 - Fixed assets
 - International accounting
 - Purchasing
 - Taxation
 - Financial consolidation
- Excluded are accounting products and services directed to a specific industry, such as tax processing services for CPAs and accountants within the business services industry sector.

Human Resources - consists of application solutions purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are:

- Employee relations
- Benefits administration
- Government compliance
- Manpower planning
- Compensation administration
- Applicant tracking
- Position control
- Payroll processing

Education and Training - consists of education and training for information systems professionals and users of information systems delivered as a software product, turnkey system or through processing services. The market for computer-based training tools for the training of any employee on any subject is also included.

Office Systems consists of the following:

- Integrated office systems (IOS)
 - Word processing
 - Desktop publishing
 - Electronic publishing
 - Image systems
- IOSs—such as IBM's OfficeVision, HP's NewWave Office and DEC's All-In-1—typically include the following core functions, all of which are accessed from the same desktop: electronic mail, decision support systems, time management and filing systems.
 - Office systems graphics include presentation graphics (which represent the bulk of office systems graphics), paint and line art, page description languages, and electronic form programs.
 - The fundamental difference between electronic publishing and desktop publishing (within the office systems sector) is that electronic publishing encompasses a method of document management and control from a single point—regardless of how many authors/locations work on a document—whereas desktop publishing is a personal productivity tool and is generally a lower end product residing on a personal computer.
 - Electronic or computer publishing systems that are sold strictly and specifically to commercial publishers, printers, and typesetters are excluded from cross-industry consideration and are included in the discrete manufacturing industry.

Engineering and Scientific encompasses the following applications:

- Computer-aided design and engineering (CAD and CAE)
 - Structural analysis
 - Statistics/mathematics/operations research
 - Mapping/GIS
- Computer-aided manufacturing (CAM) or CAD that is integrated with CAM is excluded from the cross-industry sector as it is specific to the manufacturing industries. CAD or CAE that is dedicated to integrated circuit design is also excluded because it is specific to the semiconductor industry.

Planning and Analysis consists of software products and information services in four application areas:

- Executive Information Systems (EIS)
- Financial modeling or planning systems
- Spreadsheets
- Project management

Other encompasses marketing/sales and electronic publishing application solutions.

- Sales and marketing includes:

- Sales analysis
- Marketing management
- Demographic market planning models

3. Delivery Mode Reporting by Sector

This section describes how the delivery mode forecasts relate to the market sector forecasts. Exhibit 11 summarizes the relationships.

- *Processing services* - The transaction processing services submode is forecasted for each industry and cross-industry market sector. The utility and other processing services submodes are forecasted in total market in the general market sector.
- *Turnkey systems* - Turnkey systems is forecasted for the 15 industry and 7 cross-industry sectors. Each component of turnkey systems is forecasted in each sector.
- *Applications software products* - The applications software products delivery mode is forecasted for the 15 industry and 7 cross-industry sectors. In addition, each forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.
- *Systems operations* - Each of the systems operations submodes is forecasted for each of the 15 industry sectors.
- *Systems integration* - Systems integration and each of the components of systems integration are forecasted for each of the 15 industry sectors.
- *Professional services* - Professional services and each of the submodes is forecasted for each of the 15 industry sectors.

EXHIBIT 11

Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	General
Processing Services	Transaction	X	X	
	Utility			X
	Other			X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform	X		
	Applications	X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications	X		
	Electronic Information Services	X		X
Systems Software Products				X
Equipment Services				X

- *Network services* - The network applications submode of network services forecasted for each of the 15 industry sectors.

Industry and cross-industry electronic information services are forecast in relevant market sectors. The remainder of electronic information services is forecasted in total for the general market sector.

- *Systems software products* - Systems software products and its submodes are forecasted in total for the general market sector. Each submode forecast is broken down by platform level: mainframe, mini-computer and workstation/PC.

- *Equipment services* - Equipment services and its submodes are forecasted in total in the general market sectors.

F

Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues and user expenditures. INPUT defines and forecasts the information services market in terms of user expenditures. User expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels (such as original equipment manufacturers (OEMs), retailers and distributors). The focus on user expenditure also eliminates the double counting of revenues that would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., ComputerLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some areas of significant difference. Many microcomputer software products, for example, are marketed through distribution channels. To capture the value added through these distribution channels, adjustment factors are used to convert estimated information services vendor revenues to user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. Turnkey vendors incorporate purchased software into the systems they sell to users.

To account for such intra-industry transactions, INPUT uses conversion ratios to derive the estimate of end-user expenditures.

Exhibit 12 summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to user expenditure (market size) figures for each delivery mode.

EXHIBIT 12

Vendor Revenue to User Expenditure Conversion

Delivery Mode	Vendor Revenue Multiplier
Applications Software Products	1.18
Systems Software Products	1.10
Systems Operations	0.95
Systems Integration	0.95
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95
Equipment Services	0.99

